Portfolio Investment and Weighting Strategies for High Quality Stocks, 2008-2011: A Study in Portfolio Management

By: Hannah Viertel
Advisors: Dr. Robert Dean and Dr. John Rapp

Background:

In recent years, increasing volatility in stock markets has caused many portfolio managers to change their portfolio strategies by increasing their purchases of higher quality stocks in order to reduce investment risk and increasing their stock turnover ratio, resulting in shorter term trading strategies. The combined strategy has some performance risk since it is not clear that high quality stocks outperform over shorter periods of time, especially when these market periods are highly volatile.

Purpose:

To determine if high quality mega cap portfolios of stocks can outperform the market over the short-term, highly volatile market period of 2008-2011. Four portfolio weighting strategies will be used: (1) company size, (2) valuation, (3) profitability, and (4) operating efficiency.

Portfolio Weighting Factors:

Company size = Market capitalization (MC)
Valuation = Price/Book Ratio (P/B)
Profitability = Return on Assets (ROA)
Operating Efficiency = Operating Margin (OM)

Portfolio Weighting Process:

Step 1: Establish ROA Weights (example)

- ROA_{it} = return on assets for i^{th} stock at time t
- Where $ROAw_{it}$ = ROA weight (%) for the i^{th} stock at time t

Step 2: Establish Dollar Value Investments

- $DV_{it} = ROAw_{it}$ x 1,000,000
- Where:
- DV_{it} = Dollar value investment in the i^{th} stock at time t
- $ROAw_{it}$ = Percent of weight for the i^{th} stock at time t based on ROA
- $1,000,000 = hypothetical investment

Step 3: Determine Number of Shares

- $SHARES_{it} = DV_{it}/P_{it}$
- $SHARES_{it}$ = number of shares invested in the i^{th} stock at time t
- DV_{it} = dollar value invested in i^{th} stock at time t
- P_{it} = price of i^{th} stock at time t

Step 4: Determine future dollar values of i^{th} stock

- $DV_{i(t+n)} = SHARES_{it}$ x $P_{i\,(t+n)}$

Where:

- $DV_{i(t+n)}$ = dollar value of the i^{th} stock at $t+n$ periods
- $SHARES_{it}$ = shares invested in the i^{th} stock at $t+n$ periods
- $P_{i\,(t+n)}$ = price of stock at $t+n$ periods

Step 5: Determine future portfolio values

- $PV_{i(t+n)} = \sum^{n}_{t=1} \sum^{n}_{t=1} DV_{i(t+n)}$

Step 6: Repeat the above weighting procedure for the other weighting factors.

Conclusions:

Top performers:
2007-2011 = ROA (Profitability)
2008-2011 = P/B (Valuation)
2009-2011 = ROA (Profitability)
2010-2011 = P/B (Valuation)

Factor Outperformance vs. S&P

Time period	Factor Weights
2007-2011	MC, P/B, OM, ROA
2008-2011	P/B, OM, ROA
2009-2011	MC, P/B, OM, ROA
2010-2011	MC, P/B, OM, ROA

Results	MC	P/B	OM	ROA	S&P
12/31/07 - 12/31/11	-9.891%	-0.634%	-2.372%	1.877%	-14.353%
12/31/08 - 12/31/11	26.606%	49.230%	48.167%	44.532%	39.231%
12/31/09 - 12/31/11	15.334%	22.663%	12.875%	23.580%	12.779%
12/31/10 - 12/31/11	4.828%	8.448%	5.054%	7.768%	-0.003%

Excess Returns	MC	P/B	OM	ROA
12/31/07 - 12/31/11	4.463%	13.719%	11.982%	16.231%
12/31/08 - 12/31/11	-12.624%	9.999%	8.936%	5.301%
12/31/09 - 12/31/11	2.555%	9.884%	0.096%	10.800%
12/31/10 - 12/31/11	4.831%	8.451%	5.057%	7.771%